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marily because the capital cost of all the electrical equipment is eliminated. It is chiefly for this reason that there are over 3,000 large diesel-driven irrigation pump installations along the Tigris and Euphrates Rivers, many of them very close to electric generating stations. In a similar manner, most of the older industrial enterprises and even many of the new ones have followed the same practice of using diesel engines as a source of power. In the field of public transportation, diesel or gasoline engines are universally used as a means of motive power, while kerosene and other fuels meet the country's needs for domestic heating and cooking. It is not surprising, therefore, to find the development of electric power to be on a very small scale and the per capita consumption among the lowest in the world; the total generating capacity in utility plants operating for public use is not more than 65,000 kw. Of this 42,000 kw. serves the city of Baghdad and 9,000 kw. is at Basra

Production and distribution of electricity in Baghdad are carried on by the Baghdad Light and Power Company and in Basra by the Port Authority. In Kirkuk the municipality receives its power from the Iraq Petroleum Company's large plant but is responsible for distribution. In all other municipalities, the electricity system is run by the local Electricity Board.

Recent expansions by the Baghdad Light and Power Company and by the electric plant in Basra appear to be adequate for the immediate future, unless new industries or other heavy loads create power demands beyond those now anticipated. Apart from Kirkuk, however, the remaining municipalities are badly in need of power. To meet this need, the Department of Municipalities has established a plan of development which is very practical. This plan calls for the construction of new plants in approximately 56 municipalities having an aggregate population of 175,000 and the expansion of existing plants in 47 municipalities having an aggregate population of approximately 750,000. All plants would be based on the use of relatively small, slow-speed, heavy-duty, diesel-engine generators having a combined capacity of not over 10,000 kw. Fortunately, many of the generating units would be identical, permitting standardization and allowing maintenance to be carried out by central repair facilities. It is estimated that the total cost including

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distribution systems would be approximately ID 1,550,000, of which ID 1,000,000 would be in foreign exchange, mostly sterling. The financing of this development will need to be undertaken by the Development Board.

It is important, however, that expansion of supply be accompanied by thoroughgoing measures to assure more efficient management. The only utilities that can be said to be operated efficiently are those at Baghdad and Basra. In spite of a considerable burden on its revenue (see Annex D, *Industry*), the Baghdad Light and Power Company charges the lowest rates in the country, pays regular dividends to its stockholders and finances plant expansions from reserves set aside for such purposes.

Rates charged by the municipally-owned plants vary widely, and, generally speaking, are twice those in either Baghdad or Basra. In some localities, the demand for power is so much greater than supply that rates are made exceptionally high for the purpose of discouraging the normal use of electricity by large consumers. Distribution losses are frequently as much as 36 percent and because of poor maintenance an engine generator is seldom capable of operating at more than 50 percent of its designed rating. Records are also very poor and in some cases nonexistent. It is obvious, therefore, that the present form of administration is unsatisfactory and must be changed if the consumer of electricity is to be adequately served. It is recommended, therefore, that all publicly-owned electric utilities be placed under the management of a competent private firm like the Baghdad Light and Power Company by means of a mutually satisfactory operating contract. The contract should require all operations to be conducted in accordance with sound utility practices and it should include some incentive to reduce rates to the level now enjoyed in Baghdad and Basra.

It has sometimes been argued that hydroelectric power should be developed as part of the projected water-storage schemes. While the possibility of such development undoubtedly exists, the Mission believes that thermal plants are at present the most economic source of power in Iraq. Hydroelectric plants require a much higher capital investment than thermal plants. They tend to be economical only where fuel costs are relatively high and there is

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a comparatively high and steady demand for power. In Iraq, however, fuel is very cheap and electricity is principally used for lighting so that the load factor is low. Moreover, hydroelectric power would have to be transmitted at considerable expense over long distances to the principal centers of consumption, since the potential hydroelectric power sites are all in the North. The possibility of developing hydroelectric power in connection with the Wadi Tharthar project nearer Baghdad appears problematic.